



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,715	02/10/2004	Nelson Nahum	01472/LH	2802
1933 7590 06/11/2007 FRISHAUF, HOLTZ, GOODMAN & CHICK, PC 220 Fifth Avenue 16TH Floor NEW YORK, NY 10001-7708			EXAMINER CHOI, WOO H	
			ART UNIT 2189	PAPER NUMBER
			MAIL DATE 06/11/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/776,715

Applicant(s)

NAHUM, NELSON

Examiner

Woo H. Choi

Art Unit

2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent-term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 – 3, 5 – 27, and 29 – 48 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohran (US Patent No. 6,397,307).

3. With respect to claims 1, 2, 16 – 18, 20, 25, 26, 40 – 42, and 44, Ohran discloses a system for asynchronously mirroring a selected data object from at least one local storage device (SDL) into at least one remote storage device (SDRx), the at least one local storage device being coupled to a first processing facility (HL), and the at least one remote storage device being coupled to a second processing facility (HR), and where the at least one local storage device, the at least one remote storage device, the first and the second processing facility are coupled to a network connectivity comprising pluralities of users, of processing facilities and of storage devices (figure 1), the system comprising:

a mirroring functionality running in the first and in the second processing facility, comprising:

a freeze procedure applied for freezing the selected data object as a source volume (figure 2, T1, T2, T3, snapshots), a copy procedure (col. 8, lines 27 – 45) for copying the frozen selected data object into the at least one remote storage device (figure 1, 24),

creating simultaneously to the application of the freeze and copy procedure a local auxiliary volume (figure 3, 70, 72, etc...) in the local storage device to which updates addressed to the frozen selected data objects are redirected (the update “volumes” contains changes or update made subsequent to the snapshot operations), of a remote volume having a same size as the frozen source volume in the remote storage device (mirrored remote volume 50 is a replica of 20, the ‘frozen’ volume), forming in the local storage device a resulting source volume including the frozen source volume and the local auxiliary volume, and copying the frozen source volume to the remote volume,

repeating successively the freeze and copy procedure (see figures 2 and 3) by freezing a last created local auxiliary volume (70, 72) and simultaneously creating a next local auxiliary volume (72, 74, etc...) to which updates address to the frozen data are redirected, creating a next remote volume (52, 54, 56, etc..., alternatively 50 + updates), and adding the last created local auxiliary to the last formed resulting source volume to form a new resulting source volume (20 + 72), and copying a before last frozen local auxiliary volume to a last created remote volume (52, or 50 + 52),

permitting use and updating of the selected data object in parallel to running of the mirroring functionality (figure 2), and commanding by default repeated run of the mirroring functionality, unless receiving command for mirroring break (the snapshot and copying functions are performed as default backup operations, unless interrupted), whereby the selected data object

residing in the at least one local storage device is copied and sequentially updated into the at least one remote storage device (see figure 3).

4. With respect to claims 3, 5 – 11, 27, 29 – 30, see figure 1 and col. 9, lines 35 – 37, . Snapshot backup operations can be performed on multiple storage devices with each device containing multiple data objects (files, for example), which appear to cover different permutations claimed. Also note that the mirroring operation applies to a single data object (a large logical volume) or all data objects (files) stored in 20 simultaneously.

5. With respect to claims 12 – 15, 19, 22 – 24, 36 – 39, 43, 45 – 48, see rejections of claims 1 and 2 above. These claims cover repetitions of claims 1 and 2 at different time intervals. Figures 2, 3 and 4 disclose the claimed operations at sequential time intervals. Synchronization of volumes is disclosed in figure 4 and its corresponding text in the specification.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran in view of Jones (US Patent Application Publication No. 2002/0156971, hereinafter “Jones”).

Ohran discloses all of the limitations of the parent claim as discussed above. However, Ohran does not specifically disclose that mirror functionality is configured to work both ways, from local device to remote device, and vice-versa. On the other hand Jones discloses a mirroring system that works both ways (figure 4). It would have been obvious to one of ordinary skill in the art, having the teachings of Jones and Ohran before him at the time the invention was made, to configure Ohran's system to mirror data both ways as taught by Jones. Mirroring data both ways increases reliability without increasing the number of disks (Jones, paragraph 10). Mirroring data both way also allows the two systems of Ohran as independent primary system backing up each other which in turn provides for more efficient use of computing resources without adding additional processing systems.

Response to Arguments

8. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Woo H. Choi whose telephone number is (571) 272-4179. The examiner can normally be reached on M-F, 9:00-5:30.

Art Unit: 2189

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Woo H. Choi
June 6, 2007